

more likely to cause pipe rupture than tension. [...] Adherence to [this] mitigation measure...would reduce this impact to a less than significant level."²⁰⁵

This "mitigation measure" is disingenuous: Anywhere that the pipe were "tensioned" it would necessarily undergo equivalent compression elsewhere along its length (and likely nearby), or vice versa. In any case, "tensioning" still remains a plausible cause of pipeline rupture. The potential impact remains significant.

"Procedures *shall be developed* to mitigate any release of drilling muds that may occur and shall be documented in the HDD Contingency Plan."²⁰⁶

But there is no assurance that such procedures will be viable, given the unique combination of HDD-related technologies involved and characteristics of the specific drilling site. Have any similar HDD projects been conducted in similar West Coast nearshore conditions by the Applicant's contractors? By anyone? If so, how many, how successfully, and under what potentially problematic conditions? No such answers have been provided by the Applicant.

"Substantial displacement [by fault rupture] could cause a rupture of a pipeline.... Pipeline breaks have occurred but *apparently* they were on older pipe, pipe that was not arc welded, or on pipe in poor repair."²⁰⁷

But as pointed out above, no analysis has been provided as to how pipelines under deep-water pressures might behave during seismic events. To what extent might pressure-stressed pipes behave like "old pipes" when subjected to seismic stresses?

BHP claims that additional geophysical data will in itself minimize potential impacts:

"[A]dditional geophysical and geotechnical data will be collected along the Project route *in order to minimize potential impacts* from local conditions not documented with existing data (e.g., unknown faults, evidence of slope instability)."²⁰⁸

How so? If the implication is that the project would be redesigned, then many other risk factors could be altered. If new geological data were to show that the pipeline should be reinforced with additional concrete (for instance), how would that affect installation procedures or the amount of sedimentary perturbation incurred?

New technologies test seismic assumptions

Following the Terminal Siting Act of 1977, both FERC and CPUC determined (as ordered by an Appellate Court) that seismic risk was sufficiently low at the Pt. Conception site.²⁰⁹ However, since then, much as has been learned about structural safety through the experiences of the Loma Prieta, Northridge and other quakes, such that, had that knowledge been available at the time, the

²⁰⁵ 4.11-33,34.

²⁰⁶ 4.11-31.

²⁰⁷ 4.11-33.

²⁰⁸ Matrix, at 18.

²⁰⁹ CEC LNG.

G434-139
cont'd

Pt. Conception site likely would have failed its seismic assessment. After every large quake – whether in California or elsewhere in the world (e.g., Kobe, Japan), structural engineers learn that they have to substantially revise their notions of what and how much it takes to produce a structure that will withstand a significant quake. That pattern has been repeated and clear. Given the potential hazards associated with the project, how could it be assured that the facility would be designed to withstand quake hazards that have not yet been identified?

With so many outstanding unknowns, this section of the DEIS/R constitutes little more than an expression of the Applicant's self-confidence, all dressed-up in many pages of hypothetical thinking. The designers of such complex industrial projects as Three-Mile Island, Chernobyl, the Space Shuttle (or even the Tacoma Narrows Bridge²¹⁰) were never so confident in their own efforts – and by the comparable point in their development processes they had already worked out many more of the details than BHPB has done here. Thus, the Application can be found to be incomplete and/or infeasible on the basis of the seismic risks and uncertainties alone.

Tsunamis

The treatment of tsunami risk is subject to unknowns and uncertainties similar to those of seismic risk in general. Tsunamis are discussed here separately because they don't necessarily depend on the seismicity of the immediate region.

The DEIS/R recognizes their possibility: "Several small tsunamis have been recorded in the Project area over the last 200 years... the potential exists for a future major tsunami in the Project area. Locally generated tsunamis could result from significant displacement of submarine faults or from submarine slides."²¹¹ However, the study it most relies on (McCulloch) dates from 1985; since then, the science of modeling tsunami dynamics and probabilities has progressed markedly.

The cited wave run-up heights of 3-18 feet²¹² are based on a substantially incomplete assessment of tsunami dynamics and sources of generation. Tsunamis can be generated locally, as the DEIS/R notes; but the DEIS/R ignores that the point of generation could be virtually anywhere in the Pacific Basin, as well as the implications thereof. Tsunami waves that travel over long distances are subject to a dynamic of phase entrainment, whereby multiple shockwaves become combined into fewer, larger swells. For example, the tsunami that struck Alaska in 1964 was as high as it was (60+ ft.?) because it was generated near Hawaii, so that by the time it reached Alaska the component shockwaves had become consolidated into a single larger wave.

Also, tsunami waves are not only a sea surface phenomenon; their great energies are of course transmitted below the surface. The application has not addressed what could happen to the flexible risers and other hardware between the ship and the seabed when subjected to such intense subsurface stresses.

²¹⁰ For those who might not know, this large tension-span bridge in Washington State, fairly new in 1940, collapsed due to harmonic oscillations of its structure caused by nothing more than the wind.

²¹¹ 4.11-25.

²¹² 4.11-25.

G434-139.1

G434-139.1

See the responses to Comments G434-133 through G434-139.

G434-140

The March 27, 1964 tsunami in Alaska was due to a magnitude (M) 9.2 earthquake and slide. In a bay (that magnified the wave) in Alaska, the run-up height was up to 197 feet (60 meters [m]), while in Hawaii the maximum height was 16 feet (4.9 m). The measured tsunami after this quake was 2.6 feet (0.8 m) in Santa Barbara and 2.0 feet (0.6 m) in Los Angeles -- less than normal beach waves.

The largest earthquake ever recorded, the 1960 M 9.5 quake in Chile, produced a tsunami that was measured at 4.6 feet (1.4 m) in Port Hueneme, CA. The M 9.2 Sumatra quake of December 26, 2004, which resulted in the devastating tsunami in South Asia, produced an 8.6-inch (0.22 m) wave in San Diego. Tsunami waves have a very long wavelength and do not become "consolidated" over long distance.

G434-140

Tsunamis typically cannot be detected from a ship at sea due to the long wavelength and small amplitude in the open ocean. Variations in sea level waves are less than normal storms, and the forces on Project pipelines would be similar to or less than the forces of normal storm waves and currents.

The design tsunami event would cause a sea level change of approximately 10 feet (3 m) with a negligible water slope at the FSRU site with a wave period of 4 to 10 minutes. The design of the mooring and risers would account for a 61-foot (18.6 m) change.

Sections 4.11.1.8 and 4.11.4 contain additional information on this topic.

Thus the DEIS/R's assessment of tsunami hazards is substantially incomplete in at least three regards. First, potential wave run-up heights are not limited to 18 or so feet; a long-distance tsunami could generate a wave run-up of 60-100 feet or more. Second, the probability of occurrence is substantially greater than the stated "several...over the last 200 years," insofar as the area of potential generating sources is virtually the entire Pacific Basin, not just Southern California waters. And third, no assessment of potential sub-surface impacts has been made.

Moreover, a study conducted in the past several years shows the possibility of a tsunami being generated by a massive subsea movement occurring along a particular escarpment in a southern portion of the Southern California Bight.²¹³ The study indicates that a massive wave of 100 feet or more would inundate coastal areas of much of Southern California, including the Santa Monica Bay, and by implication, the Project area. Without inclusion of this study and an assessment of the potential risk it implies, the DEIS/R's assessment of tsunami risks remains yet more incomplete.

Indeed, the DEIS/R admits that its assessment of tsunami risk is a "preliminary appraisal."²¹⁴ An issue of such potentially overwhelming significance should have been addressed more definitively by now.

ENVIRONMENTAL ANALYSIS

4.1-1 PDF 219

Offshore oceanography and meteorology

Understated data on storms and wave heights

Data on storms, currents, and winds assume less than the 100-year maximums (despite stating so). For instance, the 100-year "significant wave height" is stated as 24.28 ft. But waves of that height occur in the offshore areas of the Project and along the coast from Pt. Dume to Pt. Mugu every few years. Waves of that size occur almost as frequently along Ormond Beach – perhaps twice per decade.²¹⁵

Relatedly, the DEIS/R suggests that the Channel Islands substantially block all waves that would reach the inshore areas,²¹⁶ and that "the average wave height in the proposed Cabrillo Port area is considerably lower than that outside the Channel Islands."²¹⁷ Not true. In fact, wave blockage by the islands is negligible, because swells *refract* around them. Indeed, the larger the swell, the

²¹³ At the moment, I don't recall where I saw this study reported; if the public comment period were longer, I would have provided the exact citation.

²¹⁴ 4.11-25.

²¹⁵ Based on personal observation over 35 years in the area. For 20 of those years, I surfed regularly so was, and have remained, unusually observant of wave heights, swell direction and the like.

²¹⁶ 4.1-9.

²¹⁷

4.1-10.

G434-140
cont'd

G434-141

G434-142

G434-143

G434-141

Section 4.11.1.8 contains updated information on this topic. The evaluation of tsunami risks in this document is based on valid data which has undergone scientific peer review and accepted by local governments and the oversight agencies.

G434-142

Section 4.11.1.8 contains revised text on this topic.

G434-143

Section 4.1.8.3 contains additional information on wave height and refraction.

greater its refractability (long wavelengths, whether in light, sound or water, refract more readily than shorter ones). So while waves heights in some inshore areas may not always be the same as those in the FSRU location, in most cases they will be essentially as large.

The "storm build-up" times used in the evaluation are limited to 4 hours. Yet storms can be active for days. The analysis should be expanded to examine the effects of storm-related stresses on offshore components over longer periods of time.

Prevailing ocean currents

The Scoping Draft misstated the direction of the prevailing ocean currents,²¹⁸ and the DEIS/R continues to do so. They contradict the map given in Dailey et al,²¹⁹ by omitting some vectors and emphasizing others to suggest that current flow in the site location is offshore. In fact, based on maps, and my own experience sailing in that location, current flow is predominantly from the NW (Davidson Current), with a West-to-East current in the project area. (See my FIGURE 4.)

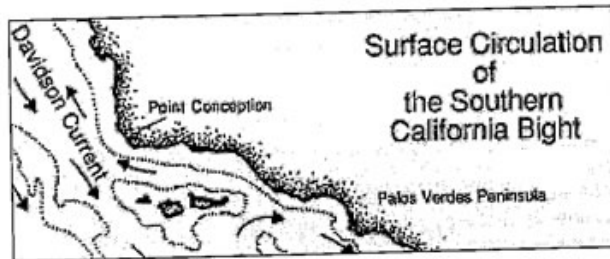


FIGURE 4: Detail from map in Dailey et al; arrow shows prevailing West-to-East surface current at project site. (Contrast with map in the DEIS/R.)

With respect to bottom currents and their interaction with the pipeline and risers, the calculation methodology is incomplete and unrealistic. The DEIS/R assumes without justification a bottom current speed of only 1.0 knot for all analyses.²²⁰ But bottom currents may be faster than surface currents under certain conditions, as the DEIS/R points out elsewhere (in discussion of upwelling, etc.). The methodology also assumes that, "the same seabed current will be applied to all sections of the pipelines."²²¹ But seabed current strength will vary significantly over the length of the pipeline. Apropos, the Applicant states, with regard to calculation methods, that "an overly conservative design...is not recommended."²²² By whom? The pipeline and riser design should be as conservative as needed to meet all reasonably foreseeable significant risks.

²¹⁸ http://dmscs.dot.gov/docimages/pdf/88/266117_web.pdf.

²¹⁹ Dailey et al, at 9.

²²⁰ TR-303R - Regulatory On Bottom Stability Analysis Report - RevA.doc Page 4 of 9.

²²¹ TR-303R - Regulatory On Bottom Stability Analysis Report - RevA.doc Page 5 of 9.

²²² TR-303R - Regulatory On Bottom Stability Analysis Report - RevA.doc Page 5 of 9.

G434-143
cont'd

G434-144

G434-144

Section 4.1.8.2 describes the general wave climate, and Section 4.1.8.3 contains additional information about the wave hindcast model.

G434-145

The figures presented in the October 2004 Draft EIS/EIR and by the commenter both represent states of circulation that occur within the Southern California Bight. However, as discussed in Section 4.1.8.1, the actual circulation pattern is much more complex than either representation. To decrease any potential confusion, the circulation patterns have been deleted from Figure 4.1-1. The Final EIS/EIR includes up-to-date available data on currents.

G434-145

With respect to visibility under hazy or foggy skies, the DEIS/R misstates the seasons of lowest visibility as August through October.²²³ Those are actually months of high visibility. Lowest visibility occurs from May through July, during the period of "June Gloom." Was this simply a clerical error? Has it had an impact on any other assessments?

Impacts on sensitive environment

Not analyzed: Potential impacts on shoreline habitats, ranging from Pt. Dume to Pt. Mugu, including sensitive areas identified in 1997 study documents in support of the proposed Malibu Marine Sanctuary.

Onshore and shoreline impacts in CINMS are not analyzed; impacts could potentially include more than just "marine life," either directly, or through interspecies interactions (e.g., bioaccumulation).

No analysis is provided with respect to Santa Barbara Island – also a protected ecological zone. It is situated SSE of the site, and could foreseeably be impacted by tankers coming and going.

Malibu marine environment still ignored

Although it was pointed out in the Scoping phase, the DEIS/R continues to substantially ignore the ecologically-sensitive marine communities of Malibu and the state waters extending west to Pt. Mugu. It apparently justifies this significant omission by relying on its own misstatements of the prevailing winds and currents; if it had identified these correctly, it would have to recognize that Malibu is both downwind and downcurrent of the Project site. The DEIS/R should have addressed the potential impacts of both spills and chronic discharges on Malibu waters and shoreline.

The Project site is ~12 miles from the Malibu Marine Refuge, as proposed in a bill that was passed by the State Legislature in 1997 (SB 1006). (See my FIGURE 5.) Notwithstanding the bill's subsequent veto by then-Governor Wilson, its supporting research documented at least eight threatened or endangered species – some of which are present in the Cabrillo Deepwater Port area – as well as a number of highly ecologically-sensitive areas in and closer to the shore zone. The main portion of the research was performed by the UCLA Marine Science Center, led by Dr. Richard Ambrose; their study documents the unique characteristics of Malibu's marine ecosystem and the variety of endangered and threatened animal species native to the area.

The UCLA study identified 11 environmentally sensitive areas in Malibu alone, 3 of which are west of Pt. Dume. It recommended prohibiting commercial fishing in Malibu waters, and no fishing whatsoever in waters west of Pt. Dume. Based on ten criteria under which coastal areas should be protected (e.g., unique habitat, vulnerable species, etc.), the study found that "the vast majority of Malibu's coastline and offshore waters are special and should be protected;"²²⁴ that "it is likely that current abundance is lower than historical levels;"²²⁵ and that "positive effects for

²²³ 4.1-15.

²²⁴ Ambrose, UCLA Report, at 13.

²²⁵ UCLA Report, at 21 (in support of the report's proposed alternative no. 5).

G434-146

G434-146

Section 4.1.8.5 contains additional information about visibility.

G434-147

G434-147

Section 4.8.4 discusses impacts on shoreline habitats, which would be avoided by using HDB to cross the shoreline at Ormond Beach, which is the only shoreline habitat that would be affected by construction activities associated with the proposed Project.

G434-148

G434-148

The proposed Project is, at its closest point, approximately 12.6 NM from the CINMS and 18.61 NM from the closest shoreline on Eastern Anacapa Island in the CINP (see Table 2.1-2). It would have no effect onshore or on the shoreline of the CINMS.

G434-149

G434-149

Section 4.7.1.6 discusses sea birds on Santa Barbara Island. Other biological resources on the island would not be impacted because the island would be approximately 22.5 NM (25.9 miles) from the proposed FSRU site. The closest LNG carrier routes would be located approximately --- NM from Santa Barbara Island.

G434-150

G434-150

The Independent Risk Assessment (Appendix C1) considered various potential LNG spill scenarios using available meteorological data from offshore buoys. Section 4.2.7.2 discusses the process of LNG evaporation and dispersion that would follow an LNG spill on water. No shoreline in Malibu would be affected and waters of Malibu would not be affected by Project discharges (see Figure ES-1).

G434-151

G434-151

See the response to Comment G434-150.

the harvested and non-harvested marine animals are expected" only in a regime of maximum environmental protection.²²⁶

G434-151
cont'd



FIGURE 5: Western portion of proposed Malibu Marine Refuge (Point Dume near center of image); from UCLA Study. Note proposed restriction on all commercial and recreational access (consumptive and non-consumptive uses) to 3-mile limit (dark line, "offshore").

To put the UCLA study in context, it describes a region of ocean and shore zone with significantly greater human population than parts of the coastline that are even closer to the proposed project; much of the coast between Malibu and Oxnard is significantly more pristine. In this regard, the study's findings in favor of maximum environmental protection should apply even more strongly to those areas.

²²⁶ UCLA Report, at xi.

Benthic communities

Disturbances to benthic communities are underestimated and under-specified, insofar as data is based on surveys providing only geological data, not direct biological data.²²⁷ Systematic ROV surveys of the pipeline area are necessary to determine the kinds of benthic species that would be impacted, and to what degree.²²⁸ Such surveys have apparently not been done. The surveys that the Applicant has relied have all been of a geotechnical nature (provided by Fugro-Geos). Such studies can provide a preliminary sense of where biotic communities *might* be located, but do not show where particular populations are actually located.

In any case, disturbances to benthic communities are likely underestimated. The application assumes that impacts will be limited to the 200-ft wide "pipeline corridor."²²⁹ But it provides no substantive basis for that specification; so BHPB cannot say that significant biological effects occurring beyond that distance are not reasonably foreseeable. Certainly, sedimentary disturbances would cloud the water column and resettle over an area greater than 200 ft. wide. But how wide of an area might be affected, either by direct changes in water chemistry or sunlight penetration (for instance), or by indirect changes such as alteration of predator/prey relationships? No one knows. (The application would have been more credible if it had analyzed potential impacts for a 1,000 ft. wide corridor, for instance.) Because no substantiation has been provided for the arbitrary 200-ft. zone, it must be assumed there is a reasonably foreseeable potential that the actual zone of significant impact could be substantially larger.

The assessment of the area of potential impact must include potential habitat – not just current actual residence – for threatened and endangered species, such as abalones. It does not.

Potential benthic disturbance caused by emplacement of the nine drag anchors is not addressed. These would cover an area of radius 1.2 km,²³⁰ or 4.52 sq. km. True, the inner area of disturbance caused by the PLEM is included in assessment of benthic disturbance, but the additional area encompassed by the anchors would be subject to an unknown degree of disturbance, as anchors are set, adjusted and re-set. Stirring of sediments would likely occur; as sediment clouds could disperse in any direction, the overall impact zone would be a circular area greater than just the 1.2 km radius described by the anchors alone. Even using the understated 100-ft disturbance zone that BHPB uses for the pipeline, this would create a total unaccounted-for area of at least 4.75 sq. km. that would potentially be disturbed during the process of anchor emplacement.

Disturbances in burying the near-shore pipeline out to 43 ft. water depth remain substantially unaddressed.²³¹

²²⁷ "Surveys of the seabed in the Project area have been performed, including sidescan sonar backscatter, shallow sub-bottom profiling, seabed sampling, multibeam bathymetry, and acoustic backscatter. The seafloor in the area of the Project is primarily fine to coarser grained sediment. No major rock outcroppings or man-made structures are in the Project area. Isolated rocks or man-made debris are located sparsely in the Project area." Matrix, at 24.

²²⁸ Matrix, at 25.

²²⁹ "Using a seafloor projection of the 2.5 NM radius precautionary zone around the mooring point, plus a 200-foot wide pipeline corridor, the maximum area of disturbance is 17,145 acres." Matrix, at 23.

²³⁰ See 2-17.

²³¹ "Horizontal directional drilling (HDD) from the onshore facility underground to offshore waters 13 meters deep will require an exit hole to be excavated. The hole will be approximately 100 feet wide, 150 feet long, and 10 feet deep and will be located

G434-152

Section 4.7.1.1 addresses this topic.

G434-153

Impact BioMar-3 in Section 4.7.7 under "Hard Bottom Habitats" contains more information on the Fugro 2004 benthic survey.

G434-154

Section 4.7 identifies potential as well as known habitat for threatened and endangered species. As stated in Section 4.7.1.1, the lack of suitable hard substrate to which abalone could attach and the algae upon which they feed makes the possibility of the presence of white abalone extremely remote.

G434-155

Impact BioMar-2 in Section 4.7.4 addresses this topic.

G434-156

Impact BioMar-1 in Section 4.7.4 discusses this topic.

G434-152

G434-153

G434-154

G434-155

G434-156

Non-native organisms

With typical tanker ships, there is a growing problem of non-native organisms (e.g., mussels, microorganisms) being discharged along with ballast water. In this case, it would appear that the problem would only occur in one direction: after the LNG is unloaded, a tanker would take on ballast water, which it would eventually discharge in a foreign port, along with any non-native species it was carrying. Under MARPOL, or any other relevant international law, might the U.S. and/or the applicant be liable for any such damage to the ecosystems of foreign harbors? Is there any possibility of non-native organisms being introduced during the construction phase? The DEIS/R appears not to address the legal and environmental implications of the U.S. allowing the importation of foreign organisms into the waters of other countries.

Established trend of promoting environmental quality

The Applicant's proposal goes against an established trend among regulatory agencies to afford greater protection to sensitive areas of the Channel Islands and Southern California Bight – the latest example perhaps being the proposed expansion of CINMS. The Project could undermine decades of hard work on the part of agency officials, research scientists and even commercial industries to preserve and enhance the ecological integrity of the region.

As another example of this trend toward greater protection, the Interagency Working Group on Vessel Risks (comprised of representatives of NOAA, the Coast Guard and others) recently recommended that all vessels with oil or hazardous cargo be directed to avoid sanctuary waters except when entering/leaving port.²³² The Working Group found that this is necessary because, "Throughout the state of California, there is evidence of past and fear of future ecosystem degradation... The impact upon marine protected areas in both State and federal waters, including seashores, reserves, preserves, refuges, underwater parks, and areas of special biological significance is profound."²³³ Relatedly, the Exxon Corp. agreed to stop "a tanker shipping operation that carried monthly boatloads of crude oil within 50 miles of the ecologically fragile Channel Islands."²³⁴

In the context of the DEIS/R, perhaps this trend may not be fully addressable in terms of specific legal requirements. But it is nonetheless real; to ignore it altogether would be to assume that the existing legal framework perfectly captures all the ways that the environment has meaning to people, physically and psychologically. So the trend should have been recognized in the DEIS/R and weighed accordingly – if not in terms of its direct environmental significance, then in terms of "aesthetics" or "socioeconomic factors."

If the proposal were to pass, it could set a dangerous precedent in industrializing a location that would have strategic implications for the future development vs. preservation of a much wider

roughly 3,000 feet from shore. This hole will be excavated, and following placement of the pipeline, will be filled with the original sediment excavated to create the hole." Matrix, at 31.

²³² Working Group, "California Marine Sanctuary Vessel Traffic Study for national marine sanctuaries in California," at 7.

²³³ Seastrand.

²³⁴ Mitchell, J.E., *Exxon Agrees To Halt Shipping Near Islands; Environment: Oil Company Says It Will Comply With Cease-And-Desist Order*, Los Angeles Times, April 8, 1995, at B1.

G434-157

G434-157

Potential impacts on foreign/international ports as a result of ballast water discharge or exchange within the jurisdiction of other countries are not addressed in the NEPA or CEQA.

Section 4.1.7 describes the underlying assumptions of the document; compliance with open ocean exchange of ballast water is presumed because 33 CFR Part 151 has mandatory reporting of ballast water exchange outside the Exclusive Economic Zone (EEZ) 200 NM from the coast. In addition, the Applicant has committed to conducting ballast water exchanges outside of the 200 NM EEZ.

G434-158

G434-158

Section 4.7.1.4 addresses this topic.

G434-159

G434-159

Section 1.6 contains information on this topic. In addition, each resource section includes a table with the applicable legal and regulatory requirements that relate to the proposed Project.

region. Opponents of environmental preservation in nearby areas could point to it and say, "see the area is already compromised." Developers (e.g., oil companies), might see an open door towards renewing their push for resource extraction (e.g., new platforms) or other commercial ventures. The project could be more than just a single, anomalous blight upon an otherwise pristine ocean wilderness; in the worst-case scenario, it could be the first step down a slippery slope towards the eventual abandonment of the sanctuary concept and the commercial privatization of Southern California's offshore islands.

G434-159
cont'd

G434-160

Section 4.7.1.5 and Impact BioMar-4 in Section 4.7.4 discuss this topic.

G434-161

Impact BioMar-9 in Section 4.7.4 discusses this topic.

G434-162

Impact BioMar-6 in Section 4.7.4 discusses this topic.

BIOLOGICAL RESOURCES – MARINE

4.7 PDF 455

Marine mammal impacts

A variety of marine mammal species are recognized as present (or potentially so) in the project area, yet the potential impacts on them remains incomplete. These species include: three species of Federal endangered baleen whales, the blue, fin, and humpback whales; Gray whales (especially females and calves, present in southern California waters in Spring); Northern right whale; multiple dolphin species; Northern elephant seals; several seal species, and sea lions.

G434-160

Analysis of vessel strikings is missing and required. Still unanswered are comments made by an agency reviewer on an early draft:

G434-161

"Laist et al. (2001) found that fin whales are struck most frequently, while right whales, humpback whales, sperm whales, and gray whales are commonly struck. Between 1975 and 1980, 12 vessel strikes with gray whales were documented off southern California, which resulted in six gray whale deaths (Patten et al. 1980). Three themes were apparent of the vessel marine mammal collisions that Laist et al. (2001) analyzed: most lethal or severe injuries were caused by ships 80 meters or longer; whales were not observed or were too close to be avoided; and most lethal or severe injuries resulted from vessels traveling 14 knots or faster."²³⁵

Likewise, analysis of spill effects on mammals is incomplete:

G434-162

"While there is specific discussion involving oil spill impacts to gray whales, there is no discussion regarding expected levels of impacts from oil spills associated with the project on other marine mammals, particularly, the pinnipeds. They not only could swim in the oil spill area, but also have the potential to be impacted via oil reaching shorelines i.e. haul-out sites or pupping grounds."²³⁶

²³⁵ Matrix, at 3.

²³⁶ NOAA commentor, Matrix, at 25.

The DEIS/R shows that apparently little or nothing has been done to address an admission made in the Scoping Draft, namely that the Project would violate the MMPA, as well as harm other threatened species:

"Marine mammals and sea turtles could be affected. Impacts could result from the unlikely event of a release of LNG, fuel, or lubricating oils from the FSRU or shuttle tankers. Additional impacts could result from construction activities, noise levels during construction, and potential contact of a Project vessel or mooring line with a marine mammal or turtle."²³⁷

Some of these impacts remain unmitigated in the current DEIS/R, noise impacts in particular (discussed below).

Meanwhile, the precedent of curtailing or abandoning activities that could impact marine mammals is already well-established in the region. For instance, the L.A. Times reported that "[t]o win state approval, Chevron agreed to do most of its [oil] platform removal work in the summer to avoid the gray whale migration along the coast. And Chevron's use of undersea explosives [has been] limited, both to avoid killing fish and to limit shock waves that could injure the delicate hearing systems of porpoises, whales and other mammals."²³⁸ The DEIS/R does not take this evident trend into account.

Inaccurate Gray Whale migration routes

The DEIS/R also perpetuates the Scoping Draft's inaccurate characterization of California Gray Whale migration routes. As I showed in my scoping comments (and reproduced here as my FIGURE 6), BHPB's original application appropriated a map of migration routes from Dailey et al.'s *ECOLOGY OF THE SOUTHERN CALIFORNIA BIGHT*,²³⁹ (shown left) and modified it to suggest that the whales swim *around* the site (right) That mischaracterized Dailey's map, which actually shows only where the greatest number of sightings occurred within a limited time range. In any given year, whales may be found anywhere within the overall swath. (By analogy, BHPB's assertion is like saying that an object dropped between lanes on a freeway would never be hit by a car because it's "between lanes.") I myself have sailed through the Project area and seen whales in the immediate vicinity.

The current DEIS/R avoids using the same map from Dailey (to avoid critique?), and instead re-imposes the same misleading interpretation on a newly-drafted map.²⁴⁰ Unfortunately, BHPB's new map even more strongly exaggerates the false assumption that the whales travel in highly defined lanes.

G434-163

G434-163

Section 4.7.1.5 and Impacts BioMar-5 and -6 in Section 4.7.4 discuss this topic.

G434-164

Section 4.7.1.5 and Impact BioMar-5 in Section 4.7.4 discuss this topic.

G434-165

The map on Figure 4.7-1 shows the approximate locations based on best available data cited in the references to Section 4.7.

G434-166

See the response to Comment G434-165.

G434-164

G434-165

G434-166

²³⁷ Scoping Appl., 5.2.2.1.

²³⁸ Stavro, Barry, *Dismantling of Oil Rigs Marks Change*, Los Angeles Times, February 21, 1996, at A3.

²³⁹ Dailey, Murray D., et al, eds., *ECOLOGY OF THE SOUTHERN CALIFORNIA BIGHT: A SYNTHESIS AND INTERPRETATION*, University of California Press, 1993.

²⁴⁰ Figure 4.7-1.

The California Gray Whale could be especially impacted by disturbance of bottom sediments during construction, due to the way it feeds: "As [it] swims slowly forward, it rolls to one side and passes within a few centimeters of a benthic food source while creating suction in its open mouth to draw in the food and sediment."²⁴² Given the possibility that toxic chemicals embedded in existing sediments would be stirred up – a possibility that has not been dismissed – many square miles of gray whale feeding ground could become contaminated for decades, causing ongoing and irreparable harm to significant numbers of the animals. Pacific white-sided dolphins are also known to feed near the bottom in continental shelf waters.²⁴³

Noise Impacts

For discussion, see below, *Noise impacts on marine mammals*.

Monitoring Plan

The Marine Mammal Monitoring Plan is inappropriate. It is based on a plan used during construction work on the San Francisco-Oakland Bay Bridge, which is not in an area of comparable marine mammal habitat; it is not in any area frequented by cetaceans, nor are there comparable quantity and size of pinniped haul-out areas along adjacent shorelines.²⁴⁴

Much about marine mammal feeding and behavior patterns remains not well understood. In particular, not much is known about their interrelationships with fisheries – except that clearly "the balance is rather delicate."²⁴⁵ Because of this, decision-makers must err on the side of caution; they must utilize the *Precautionary Principle*, taking a "better safe than sorry" approach in matters involving marine mammals.

Fish and Fisheries conflicts

Discussion of impacts on fish species and fisheries remains superficial at best, as articulated in this recent comment by an agency reviewer:

"Consultation with NMFS for EFH requires both a thorough description and discussion of the habitats as well as the species managed by the Pacific Fishery Management Council in the region of the project. Appendix B should contain a good discussion of any appropriate species in the project area managed under the four Fishery Management Plans: highly migratory species (like tunas, swordfish, and sharks), coastal pelagic species (like sardines, anchovies, and squid), groundfish (such as sole, flounders, and rockfish), and salmon (such as steelhead

²⁴² Dailey et al, at 642.

²⁴³ Dailey et al, at 648.

²⁴⁴ Dau, T. 2002. San Francisco-Oakland Bay Bridge East Span Seismic Safety Project: Marine Mammal Monitoring Plan. Prepared by Parsons Brinckerhoff, May 2002. Avail: <http://biomitigation.org/pdfs/Marine%20Mammal%20Monitoring%20Plan.pdf> (Matrix, at 26.)

²⁴⁵ Dailey et al, at 662.

G434-167

G434-167

Section 4.12.1.1 discusses areas of known marine sediment contamination. The conclusion was that "[n]o known ocean dumpsites that might contain waste hazardous materials have been identified within 0.43 NM (0.5 mile or 0.8 km) of either the proposed FSRU location or subsea pipeline." Section 4.18.1.2 provides the results of sediment sampling at the proposed HDB exit points and at the Reliant Energy Ormond Beach Generating Station outfall. Neither indicated the presence of contaminated sediments.

Since offshore construction would be avoided during gray whale migration season and the locations of the pipeline routes and the FSRU would avoid known ocean dumpsites, impacts on whales from sediment disturbance during pipeline construction and FSRU installation would be avoided.

G434-168

G434-168

The Marine Mammal Monitoring procedures incorporated into the proposed Project are described in AM BioMar-9b in Section 4.7.4. The Marine Mammal Monitoring Plan might be modified after consultation with NOAA (see Appendix I).

G434-169

G434-169

Impact BioMar-3 in Section 4.7.4 contains additional information regarding potential impacts on EFH, reflecting the current status of informal consultation between the USCG and NOAA/NMFS. See Appendix I for correspondence regarding this consultation.

and Coho). Appendix B contains a superficial discussion of rockfish and Salmon as protected under the Endangered Species Act."²⁴⁶

The Applicant admits: "Fish species that utilize habitats in non-rocky shelf and continental slope composite essential fish habitat (EFH) will be affected by loss of benthic habitat where the pipeline covers the ocean floor."²⁴⁷ But no analysis of significance is given.

The Application does not discuss the Magnuson-Stevens fishery Conservation and Management Act with its reauthorization to include Essential Fish habitat under the Sustainable Fisheries Act.²⁴⁸

Data is missing on the squid fisheries which operate in the FSRU vicinity and pipeline area.

There is no description or discussion of how the pipeline could be protected from damage due to bottom trawls, or how trawling could safely occur over/along the pipeline. BHPB's "response" is non-responsive: "The main threat to the proposed pipeline from bottom trawling is from impact with the steel trawl doors and or entanglement with trawl nets."²⁴⁹ This "threat" must be evaluated, and mitigated if necessary.

WATER QUALITY AND SEDIMENTS

4.18 PDF 817

Clean Water Act

Data for Clean Water Act requirements is missing. BHPB states, "All discharges from the Project will be addressed in the NPDES Permit Applications."²⁵⁰ But all such data must be included in the EIS/EIR evaluation for it to be meaningful.

The EPA has pointed out missing data pertaining to the Clean Water Act: "A few specific significant items that are incomplete with respect to NPDES are identified below. The application must recognize all discharges needing a permit. Discharges mentioned in the text which require a permit but are not recognized on page 5-16 include the following:²⁵¹

- Runoff from onshore construction. It appears that 1-5 acres would be disturbed, so the project would be considered "small construction" for purposes of permitting (EA page 3-21)
- Firefighting water. The application mentions a continuous discharge; system testing discharges, if they occur, should also be described (page 2-14).

²⁴⁶ Matrix, at 2.

²⁴⁷ Matrix, at 6.

²⁴⁸ Matrix, at 14.

²⁴⁹ Matrix, at 1.

²⁵⁰ Matrix, at 30.

²⁵¹ Matrix, at 30.

G434-169
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G434-170

G434-171

G434-172

G434-173

G434-174

G434-175

G434-170

Section 4.7.1.2 contains additional information on this topic.

G434-171

The regulatory agencies do not require an analysis of impacts to squid.

G434-172

Section 4.16.1.1 under "Commercial Fishing" addresses this topic.

G434-173

Sections 2.2.2.4 and 4.18 have been updated. The Applicant has also updated its NPDES permit application.

G434-174

See the response to Comment G434-173 regarding the NPDES permit. Section 2.7.1 discusses runoff associated with Project construction.

G434-175

Sections 2.2.2.5 and 4.18.4 contain updated information on this topic.

- Although hydrotest water is recognized, maintenance pigging discharges must be also be recognized (EA page 3-36). Chemical use, if any, must be clarified.
- Drill cuttings and drilling muds discharged at the exit hole from the HDD (EA page 3-24/25).
- Ballast water (EA page 3-33)
- Black water (EA page 3-35); BHP must determine whether there will be discharges.
- Cooling water from diesel generators (page 2-9 of application).

The EPA also notes: "Other information noted as incomplete in the Deepwater Port Application concerns section 404 of the Clean Water Act. EPA needs additional information regarding the potential discharge of dredged or fill material into waters of the U.S., and, if necessary, a section 404 permit application to be submitted to the Army Corps of Engineers."²⁵²

Flawed assumptions re. stormwater amounts

The NPDES application states that the system for processing oily water "will be designed to handle the expected maximum rainfall rate... Annual average rainfall in the Project location is measured at 13.9 inches per year, with a maximum of 29 inches...." That is incorrect: just two years ago, the annual rainfall in this location was approximately 35 inches.²⁵³

Similarly, the application states that the oil overflow system would handle a maximum storm intensity of "2.5 inches within 24 hours." Yet several times in only the past few years this location has experienced 24-hour storm totals of up to 6 inches. By the stated design specs, it appears that the oily water system would be subject to overflow. Moreover, insofar as NOAA climatologists predict that storms of increasing intensity and frequency will likely occur as global warming continues over the coming years, this design shortcoming will likely be accentuated.

Without more accurate representations of rainfall rates and amounts, the DEIS/R necessarily underestimates the potential risks of accidental oil discharge.

Oil Spills

Oil spill impacts, and contingency plans are incomplete. The Applicant states, "a Spill Prevention, Control and Countermeasure Plan (SPCC Plan) *will be developed* for the Project as described in Section 5.6 Hazards and Hazardous Materials. The SPCC Plan *will address* both the management and storage of these materials and describe measures to be implemented in the event of a spill."²⁵⁴ Such plans must be developed for the DEIS/R to be meaningful in this area.

²⁵² Matrix, at 31.

²⁵³ Based on a known total for Malibu, immediately adjacent to the site.

²⁵⁴ Matrix, at 3.

G434-176

G434-176

Section 2.6.5.5 includes updated information about quantities of hydrostatic water. Section 2.7.1.8 describes hydrostatic testing in detail. Section 4.18.4 discusses hydrostatic testing with respect to water quality.

G434-177

G434-177

The Project has been modified since issuance of the October 2004 Draft EIS/EIR, and horizontal directional boring (HDB) instead of horizontal directional drilling (HDD) would be used for the installation of the offshore pipeline. Section 2.6.1. has been revised and contains a detailed description of HDB.

G434-178

G434-179

G434-180

G434-178

Section 2.2.2.4 and the ichthyoplankton analysis (Appendix H1) address ballast water. Sections 4.7.4 and 4.18.4 discuss impacts on ballast water.

G434-181

G434-179

Section 2.2.2.6 and Impact WAT-5a in Section 4.18.4 contain revised information on this topic. According to Section 4.18.4, "Black water would be treated aboard the FSRU using a USCG-certified Type II Marine Sanitation Device with a sewage digester to reduce the black water volume... The liquid effluent from the treatment system would be discharged to the ocean in accordance with the facility's NPDES permit."

G434-182

G434-183

G434-180

The Project has been modified since the issuance of the 2004 Draft EIS/EIR. Cooling water from the diesel generators would be recirculated rather than discharged (see Section 2.2.2)

G434-184

G434-181

The NPDES application is not part of the EIS/EIR, but is the subject of a separate USEPA permitting process that includes opportunities for public comment. The Applicant submitted an updated NPDES application to the USEPA for its review in December 2005.

Impact WAT-5a in Section 4.18.4 discusses the processing of oily water.

G434-182

See the response to Comment G434-181.

G434-183

Section 2.2.2.4 contains information on this topic.

G434-184

A Facility Oil Pollution Contingency Plan and a Vessel Oil Pollution Contingency Plan for the Project were developed in December 2004. Spill Prevention, Control and Countermeasures Plans would be prepared once the Project were approved and final designs were prepared.

BHPB proudly cites DOE's claim that "only eight marine incidents worldwide have involved spillage of LNG." It does not acknowledge the significance of other studies:

- NOAA cites 3,500 shipping accidents in the US per year;
- The OECD cites 200 significant oil spills per year in the US;
- Spills over 1 million gallons occurs every 2 1/2 years on avg. in the US.²⁵⁵
- The Vessel Traffic Working Group found that each year, on average, the West Coast experiences over 100 accidents involving vessels 300 gross tons or larger – more than 10 of which involved significant oil spillage.²⁵⁶

BHPB does acknowledge that in the "event of an oil spill from vessels servicing the FSRU of the approximately 88,060 gallons of diesel fuel stored on the FSRU emergency power, marine mammals and sea turtles in the vicinity of the spill could be impacted."²⁵⁷ But instead of assessing the potential impact, BHPB merely states that it will (not yet) "describe measures to be implemented in the event of a spill."²⁵⁸ Might such measures be too little, too late? The impact assessment has not been performed.

With respect to non-emergency, daily operations, the CEC notes that "[s]pills are most likely to occur...during the connection and disconnection process between the ship and the on-shore unloading arms, leakage from swivel joints, emergency disconnection of unloading arms, or a rupture in the cargo ship's containment system." It's not clear that all such contingencies have been fully addressed.

Clearly, the Applicant cannot claim that it is unlikely that a spill would occur sometime in the facility's lifetime. If and when there were a spill, Coast Guard Lieutenant Commander Sharon Richey succinctly states one particular risk: "There are some limitations to what you can do off this coast. It's a simple fact that you can't boom spilled oil on 10-foot seas."²⁵⁹

Special risks of sedimentary perturbation

The Applicant's own map reveals that a substantial portion of the pipeline would be laid across a known, charted dumpsite²⁶⁰ (See my FIGURE 8.) This has not been addressed in the DEIS/R. This could be particularly significant in that any toxic chemicals liberated into the water column could migrate under the prevailing currents towards environmentally-sensitive Mugu Lagoon.

²⁵⁵ OECD, *THE ENVIRONMENTAL EFFECTS OF FREIGHT*, 1997, at 15.

²⁵⁶ Working group, at 30.

²⁵⁷ Matrix, at 25.

²⁵⁸ Matrix, at 25.

²⁵⁹ Martin, Glenn, *Marine Group Rips Oil Tanker Report But Coast Guard refutes charge spill danger ignored*, The San Francisco Chronicle, May 27, 1996, at A11.

²⁶⁰ See, e.g., http://dmsos.dot.gov/docimages/pdf88/266030_web.pdf.

G434-184
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G434-185

Impact WAT-5b in Section 4.18.4 addresses the impact of a potential diesel spill.

G434-186

Impact WAT-1 in Section 4.18.4 addresses this topic.

G434-187

As discussed in Section 4.12.1 and 4.12.5, there are no known offshore dump sites within 0.5 miles of the Project or its alternatives. On the cited map, the pipelines cross the label "dump site" and not the actual location of such site.

G434-185

G434-186

G434-187



Figure 8. The pipeline would cross through a "dump site," as shown on BHPB's own map²⁶¹ (just above center). Sedimentary perturbations here remain unassessed.

Mugu Lagoon is particularly vulnerable. "The entire 1,300-acre [Mugu] lagoon is listed as a cleanup site because of high levels of toxics, especially DDT and other pesticides, that have collected in the mud and sediment."²⁶²

Meanwhile, the Applicant assumes that "[c]oncentrations of contaminants such as metals, PCBs, bacteria, petroleum hydrocarbons, and pesticides in the sediments surrounding the Project area are typical of the Southern California Bight."²⁶³ This is problematic in at least two regards. First, a U.S. Navy captain, whose name cannot be divulged for obvious reasons, has reported off-the-record that the area is full of toxic chemicals and ordnance dumped there when it was still legal and even after it became illegal.²⁶⁴ Of course, that can't be easily substantiated; but it still bears investigation. In stirring up the seabed during the construction process, that hazardous cocktail could be liberated into the water column and atmosphere. Will the analysts of the EIS/EIR have access to classified naval documents on the toxic chemicals and munitions dumped on the seabed? Here, it appears that the risk is real, but will likely remain unknown.

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G434-188

G434-188

As discussed in Section 4.12.1 and 4.12.5, there are no known offshore dump sites within 0.5 miles of the Project or its alternatives. On the cited map, the pipelines cross the label "dump site" but not the actual location of such site. Section 4.12.1.1 uses publicly available data, and Impact WAT-2 in Section 4.18.4 analyzes the potential effects of short-term accidental unearthing of contaminants in sediments based on such data.

²⁶¹ See, e.g., http://dmscs.dot.gov/docimages/pdf88/266030_web.pdf.

²⁶² Weiss, Kenneth R., *Navy Cleaning Up Toxic Trash On Island; Waste: The Site, 60 Miles Off Point Mugu, Is Among Military Installations Nationwide That Bear The Scars Of Decades Of Hazardous Dumping*, Los Angeles Times, Jan. 29, 1996, at B1.

²⁶³ Scoping Appl. 5.2.2.6.

²⁶⁴ Confession made directly to the author.

The Applicant's assumption (above) is also problematic in that concentrations of contaminants in the Southern California Bight are already extremely high in places. What is "typical" may be dangerously high, given the degree and area of sedimentary disturbance that would be incurred.

Contrary to what the Applicant assumes, the fact that the sedimentary perturbations would occur in open ocean does not substantially mitigate the harm that could be caused by liberated contaminants. Dailey et al point out that, "[u]nlike the open ocean, where currents can dilute and diffuse pollutants, the SCB has a residence time for water that is on the order of 2-3 months, which allows contaminants to become increasingly concentrated."²⁶⁵ During the time that contaminants would linger in the project area, there would be ample time for them to be ingested by lower-order organisms and passed up the trophic chain to marine mammals and human consumers – resulting in concentrated bioaccumulation and both acute and long-term health problems.

In brief, sedimentary perturbations in the project area could have profoundly detrimental effects because, ironically, the region is in many regards one of the most pristine along all of the California Coast, and yet at the same time it has sequestered in its seafloor some of the deadliest substances known to humanity. The high degree of the potential harm, coupled with even the slightest reasonable possibility of its occurring, suggest, again, that the "No-Action Alternative" is the only prudent option.

AIR QUALITY

4.6 PDF 431

Missing data and analyses on air quality

All Project analyses involving wind conditions assuming that wind origins range from south to west. But prevailing winds in the region are westerly and northerly.²⁶⁶ Thus all meteorological and related studies are presumptively incomplete and/or incorrect. Incorrect assumptions about wind direction could produce significant consequences with respect to the size and shape of release plumes, which may be underestimated. Also, Los Angeles County is downwind by the actual prevailing currents – more so than Ventura County – so air quality assessments must be made there too.

Some data for Clean Air Act requirements is missing. EPA notes some of the work that has apparently still not been done:

"To construct and operate this facility, BHP will need federal Prevention of Significant Deterioration (PSD) and title V operating permits. To obtain these permits, BHP must submit complete applications to EPA as described in 40 CFR sections 52.21 and 71.5. Air permit applications should be provided to EPA as stand-alone documents. Alternatively, BHP may provide a summary document

²⁶⁵ Dailey et al, at 663.

²⁶⁶ Based on personal experience of 35 years observing meteorological conditions in the greater Project area. For confirmation, check <http://www.srh.noaa.gov>.

G434-188.1

G434-189

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. Section 4.6.4 contains revised text on this topic.

G434-190

See the response to Comment G434-189.

G434-191

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 4.6.2 for an updated discussion of relevant regulatory requirements, and Section 4.6.4 for an updated discussion of air quality impact analyses.

G434-189

G434-190

G434-191

explaining where each permit application element can be found in a general document such as the DPL materials.”

“Some of the more critical items that are missing from the DPL materials for the PSD application are the BACT analysis, the air quality impact analysis, and the regulatory analysis of applicable rules from the State Implementation Plan (SIP). EPA staff met with BHP representatives from ENTRIX on May 22, 2003, and in that meeting and later emails and telephone calls, EPA and ENTRIX staff discussed the PSD requirements. We communicated to ENTRIX that the air model used in the impact analysis (ISCST3) is not appropriate, and that OCD must be used instead. We understand that ENTRIX intends to perform OCD modeling.

Elsewhere, in the “Consequence Analysis of Hydrocarbon Releases” (Appendix V), many terms are not defined. In it, conditions are *averaged*, which does not account for worst-case, or near-worst-case scenarios. Also, the term “conservative” is used in a sense opposite to the standard use in risk calculations. For instance, “Since shutdown philosophy has not been finalized, the release duration was selected in a conservative way.”²⁶⁷ But here “conservative” means that they selected a long release duration, allowing for more gradual gas cloud dispersion.

The Worst Case Meteorological Data Applicability Analysis²⁶⁸ assumes calm conditions as the “worst case.” Whereas a true worst case would involve some wind drift, where, for instance, a cloud would drift into the shipping lanes. Worst-case data must be provided.

The Worst Case Meteorological Data Applicability Analysis incorrectly incorporates data from an irrelevant measurement buoy. Of only two data buoys selected, the Santa Barbara Channel buoy is far from the site, in a locale with a different meteorological regime; the “worst case conditions” derived from it are significantly less frequent than those of the buoy closer to the site. Averaging the data from the two buoys significantly understates the risk frequency. The Santa Barbara buoy averages 6.3 “worst-case” episodes per year, whereas the closer Santa Monica Basin buoy averages 20.3 episodes per year – over three times more frequent.

Operational air pollution

It is not clear that all operational emissions have been included in the DEIS/R analysis. For instance, not all transits of tugs and other support vessels have been counted. In this regard, the CEC finds that “the tug boats which must escort LNG tankers into port are typically equipped with diesel-fired engines. The air quality analysis conducted for [a] proposed Bechtel/Shell LNG facility found that tug boats were the largest source of air pollution associated with the proposed facility.”²⁶⁹ The vessel counts should be double-checked.

²⁶⁷ Appendix V.6.

²⁶⁸ Worst Case Meteorological Data Applicability Analysis – Offshore Buoy Data Sets (Attachment V-1.1, p 17 et seq.)

²⁶⁹ CEC LNG, at 15.

G434-191
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G434-192

Section 4.6 contains the most up-to-date information about the Project-related emissions.

G434-193

Section 4.2 and the Independent Risk Assessment discuss the parameters used in the modeling completed for the risk analysis. Section 4.6 contains the results of all the modeling done in support of the air quality analysis.

G434-194

Section 4.1.8 discusses the selection of buoys used in the analysis. See the response to Comment G434-193.

G434-192

G434-193

G434-194

G434-195

G434-195

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Section 4.6.1.3 contains a revised discussion of emissions from Project construction and operations. Appendices G1 and G2 include the assumptions and emission factors used to calculate emissions.

Effects on Malibu's airshed

The DEIS/R should have paid specific attention to air quality affects in Malibu, as it is the closest populated community downwind of the Project site. For some sense of the air pollution that Malibu could experience, a 2003 study of the effects of vessel emission on Santa Barbara County is relevant, insofar as virtually all of the large vessel traffic that transits the Santa Barbara coast goes past Malibu in the same shipping lane. In Santa Barbara County, "NOx emissions from marine vessels [are] more than those from all on-road motor vehicles [combined]."²⁷⁰ Of 6,000+ vessel transits per year, 150 tanker transits account for a disproportionately high percentage of emissions,²⁷¹ accounting for 37% of the NOx pollution in the County.²⁷² As a result, "Santa Barbara County is currently classified by the EPA as a 'serious' nonattainment area for the federal 1-hour ozone standard."²⁷³

Presumably, similar pollution characteristics apply to Malibu; it may even be worse, due to seasonal offshore winds that blow Los Angeles smog out over Malibu. Given that the current number of annual tanker transits is approximately 150 (the same as in Santa Barbara), and that the Project would add more than 400 tanker transits, this would roughly triple the number of tanker transits near Malibu waters, significantly increasing local NOx pollution. Overnight, the greater Malibu area could go from having some of the cleanest air in Southern California to being on the "most unhealthful" list.

NOISE IMPACTS

4.14 PDF 722

Incomplete, inaccurate noise measurements

The DEIS/R discussion of deciBels and alternative measures of sound pressure levels remains both incomplete and confused. Typically, the numbers used represent *average* sound pressure levels, which include all the "quiet" moments between operational noises; *peak* levels would be much higher, perhaps extraordinarily so. (By analogy, a hammer hitting a nail might produce, say an 85 dB peak, but the average sound pressure of the whole process could be lower than 20 dB, depending on the length of silences between hits.) Even the 75 dBA figure for operational noise seems low; by comparison, a home stereo system operated at a comfortable mid-level volume produces ~80 dBA.

²⁷⁰ Santa Barbara County Air Pollution Control District, *The Need to Reduce Marine Shipping Emissions: A Santa Barbara County Case Study*, Paper # 70055, 2003 ("APCD"), at 1.

²⁷¹ APCD, at 5.

²⁷² Santa Barbara County Air Pollution Control District (APCD) 2001 Clean Air Plan, 1999. (out of 6,000 total ship transits.) SB, at 3.

²⁷³ APCD, at 3.

G434-196

The Project has been modified since issuance of the October 2004 Draft EIS/EIR. See Section 1.4.2 for a summary of Project changes. Impact AIR-8 in Section 4.6.4 contains an updated analysis of impacts on air quality from the FSRU and Project vessels.

G434-197

Section 4.14.1 has been updated to clarify noise measurement levels and units used.

G434-196

G434-197